

## REMARKS

Favorable reconsideration of this application in view of the remarks to follow is respectfully requested.

Before addressing the specific grounds of rejection raised in the outstanding Office Action, Applicants have amended Claims 21 - 27, 32 - 33, and 35 - 37 in the manner indicated supra.

Specifically, Claims 21 - 27, 32 - 33, and 35 - 37 have been amended to positively state a first semiconductor active area and a second semiconductor active area. Explicit references to active areas are made in paragraphs [0016], [0027], [0032], [0068], [0072], and [0076] of U.S. Patent Application Publication No. 2004/0242010 ("010 Publication" hereafter), which is a publication of the instant application. Further, each of the active areas referred to in the above referenced paragraphs is a portion of a semiconductor substrate 50. Therefore, each of the active areas is necessarily a semiconductor active area.

Claim 21 has also been amended to positively recite that a first semiconductor active area and a second semiconductor active area are located in a semiconductor substrate. Further, Claim 21 has been amended to positively recite that the first semiconductor active area has, and is laterally surrounded by, a first sidewall and that the second semiconductor active area has, and is laterally surrounded by, a second sidewall. Yet further, Claim 21 has been amended to positively recite that the first sidewall does not contact any nitride liner, and that a nitride liner laterally abuts the second sidewall, and that a first trench isolation region laterally abuts the first sidewall, and that the second trench isolation region laterally abuts the nitride liner. Support for the amendments to Claim 21 is found in FIGS. 5B and 5C and accompanying paragraphs of the instant application.

Claim 32 has been amended to positively recite that a trench isolation region, a first semiconductor active area, and a second semiconductor active area are located in a semiconductor substrate. Further, Claim 32 has been amended to positively recite that the first semiconductor active area has, and is laterally surrounded by, a first sidewall and that the second semiconductor active area has, and is laterally surrounded by, a second sidewall. Yet further, Claim 21 has been amended to positively recite that the first sidewall does not contact any nitride liner, and that a nitride liner laterally abuts the second sidewall, and that the trench isolation region laterally abuts. Even further, Claim 32 has been amended to positively recite a nitride liner that laterally abuts the second sidewall and the trench isolation region. Support for the amendments to Claim 32 is found in FIGS. 5B and 5C and accompanying paragraphs of the instant application.

Further, Claims 24, 26, and 35 have been amended to positively state that any bird's beak structure comprising a dielectric material and having a taper in lateral width is absent between said first semiconductor active area and said first trench isolation region. Support for this amendment is found in FIGS. 2, 5B, and 5C and accompanying paragraphs.

Yet further, Claims 25 and 36 have been amended to positively state at least one bird's beak structure including a dielectric material and having a taper in lateral width and is located between said second semiconductor active area and said second trench isolation region. Support for this amendment is found in FIG. 2 and accompanying paragraphs and in paragraph [0071] of the '010 Publication. Specifically, paragraph [0071] of the '010 Publication contains "in the present invention, nitrided surface layer 68 substantially prevents bird beaks from forming on some portions of the isolation regions, while bird beak formation is allowed to occur in those portions in which no surface nitrided layer is present, i.e., in the PFET device area."

Claims 28 and 38 have been cancelled.

Since the amendments are supported by the specification, entry of the amendments is respectfully requested.

In the outstanding Office Action, Claims 22, 24 - 26, 28, 33, 35, 36, and 38 stand rejected under 35 U.S.C. § 112 for allegedly being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention. Claims 21 - 40 stand rejected under 35 U.S.C. §103(a) as alleged obvious over the combined disclosures of U.S. Patent No. 6,348,394 to Mandelman et al., (hereinafter "Mandelman"), U.S. Patent Application Publication No. 2004/0155275 to Divakaruni et al., (hereinafter "Divakaruni"), U.S. Patent No. 6,156,620 to Puchner et al., (hereinafter "Puchner"), and U.S. Patent Application Publication No. 2004/0212035 to Yeo et al., (hereinafter "Yeo").

In response to the Examiner's rejection of Claims 22 and 33 under 35 U.S.C. §112, Applicants submit that currently amended Claims 21, 22, 32, and 33 positively recite a first semiconductor active area and a second semiconductor active area so that the exact location of the areas under stress is now defined in Claims 22 and 33. Applicants submit the extent of the first semiconductor active area and the second semiconductor active area is defined by the definition of the words in the first and second "semiconductor active areas." Further, the geometrical relationship of the first and second semiconductor active areas relative to other elements of the inventive structure is defined in Claims 21 and 32. Applicants submit that the rejection of Claims 22 and 33 under 35 U.S.C. §112 have thus been obviated.

In response to the Examiner's rejection of Claims 24 - 26, 35, and 36, Applicants submit that currently amended Claims 24 - 26, 35, and 36 positively states a bird's beak structure that includes "a dielectric material and having a taper in lateral width." Further, Applicants submit

that a bird's beak structure is well known in the art. Given the amendments made to Claims 24 - 26, 35, and 36, Applicants submit that the rejection of Claims 24 - 26, 35, and 36 under 35 U.S.C. §112 has been obviated.

As currently amended, Applicants submit that the exact structure of the claimed invention is definite for all pending claims. Applicants respectfully request that the rejection under 35 U.S.C. §112 be withdrawn.

Concerning the obviousness rejection, Applicants observe that Yeo has an effective U.S. filing date of April 25, 2003. Applicants respectfully submit that the present invention was made in the U.S. prior to the effective filing date of Yeo. In this regard, Applicants respectfully submit a copy of an executed Declaration under 37 CFR 1.131 ("the Declaration").

In the Declaration, the inventors testify that prior to April 25, 2003, they had conceived and reduced to practice semiconductor structures, as are recited in Claim 21 and 32 of the present application.

As evidence of the conception and reduction to practice of the claimed structures described above as claimed in Claim 21 and Claim 32 of the instant application prior to the effective filing date of Yeo, Applicants also submit Exhibit A together with the Declaration. Exhibit A is a true reprint in PDF format of IBM Invention Disclosure FIS8-2002-0306 which was created prior to April 25, 2003. Exhibit A includes a Main Idea section for the Invention Disclosure, which describes the inventive structures that are recited in Claim 21 and Claim 32 of the present application. The Main Idea discloses the semiconductor structures that are recited in Claim 21 and Claim 32 of the present application. All names and dates have been redacted in the preparation of this Declaration.

Accordingly, Yeo is disqualified as prior art. Therefore, the instant § 103 rejection is based solely on the combination of Mandelman, Divakaruni, and Puchner.

Applicants submit, in this regard, that the claimed structures, as recited in currently amended Claims 21, 32 and the dependent claims therefrom, are not rendered obvious by the combined disclosures of Mandelman, Divakaruni, and Puchner.

Specifically, none of the references teach or suggest the coexistence of a first trench isolation region laterally abutting a first sidewall of a first semiconductor active area, wherein the first sidewall does not contact any nitride liner **AND** a second trench isolation region laterally abutting a nitride liner, which laterally abuts a second sidewall of a second semiconductor active area. Further, none of the references teach or suggest the coexistence of a first sidewall that adjoins a trench isolation region, in which a first sidewall of a first semiconductor active area that laterally abuts the trench isolation region and does not contact any nitride liner **AND** a nitride liner laterally abutting a second sidewall of a second semiconductor active area and the trench isolation region.

Applicants observe that all sidewalls of a trench isolation region in each of the applied references have the same composition. Applicants submit that in order to have different compositions on different sidewalls of one or multiple trench isolation region(s), it is necessary to differentiate sidewalls during processing as the present invention does. None of the applied references provide such a mechanism, and therefore, the applied references are incapable of producing a structure having two different compositions for different sidewalls of (a) trench isolation region(s). In contrast, the present invention teaches the use of a block mask to differentiate the various portions of the sidewalls, as disclosed in paragraphs [0025], [0030], [0038], [0066], and [0067] of the instant application. One of ordinary skill in the art cannot

produce the inventive structure as disclosed and claimed in the instant application from a combination of the applied references.

The various §103 rejections also fail because there is no motivation in the applied references, either individually or in practicable combinations, which suggests modifying the disclosed structures to include the various elements recited in the claims of the present invention. There is no motivation provided in the applied references, or otherwise of record, to make the modification mentioned above since no benefit of differentiating sidewalls of trench isolation region is mentioned in the applied references and any such attempt would only drive up the processing cost of the prior art structures during manufacturing. The mere fact that the prior art may be modified in the manner suggested by the Examiner does not make the modification obvious unless the prior art suggested the desirability of the modification." In re Vaeck, 947 F.2d, 488, 493, 20 USPQ 2d. 1438, 1442 (Fed.Cir. 1991).

In view of the above remarks, the rejection under 35 U.S.C. §103 has been obviated; therefore reconsideration and withdrawal thereof is respectfully requested.

Respectfully submitted,



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Encl: Executed Declaration under 37 C.F.R. §1.131 with Exhibit A

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